A.D. 1839 . . . . . N° 8160.

SPECIFICATION

OF

LORD WILLOUGHBY DE ERESBY.

COMPRESSING PEAT.

LONDON:
PRINTED BY GEORGE E. EYRE AND WILLIAM SPOTTISWOODE,
PRINTERS TO THE QUEEN'S MOST EXCELLENT MAJESTY:
PUBLISHED AT THE GREAT SEAL PATENT OFFICE,
25, SOUTHAMPTON BUILDINGS, HOLBORN.
1857.

A.D. 1839 . . . . . N° 8160.

Compressing Peat.

LORD WILLOUGHBY D'ERESBY'S SPECIFICATION.

TO ALL TO WHOM THESE PRESENTS SHALL COME, I, the Right Honorable Peter Robert Drummond, Lord Willoughby de Eresby, send greeting.

WHEREAS Her present most Excellent Majesty Queen Victoria, by Her Royal Letters Patent under the Great Seal of Great Britain, bearing date at Westminster, the Twentieth day of July, in the third year of Her reign, did, for Herself, Her heirs and successors, give and grant unto me, the said Peter Robert Drummond, Lord Willoughby de Eresby, Her especial full power, sole privilege and authority, that I, the said Peter Robert Drummond, Lord Willoughby de Eresby, my exors, admors, and assigns, or such others as I, the said Peter Robert Drummond, Lord Willoughby de Eresby, my exors, admors, or assigns, should at any time agree with, and no others, from time to time and at all times during the term of years therein expressed, should and lawfully might make, use, exercise, and vend, within England, Wales, and the Town of Berwick-upon-Tweed, my Invention of "Improvements in Compressing Peat;" in which said Letters Patent is contained a proviso that I, the said Peter Robert Drummond, Lord Willoughby de Eresby, shall cause a particular description of the nature of my said Invention, and in what manner the same is to be performed, to be inrolled in Her said Majesty's High Court of Chancery within six calendar months next and immediately after the date of the said in part recited Letters Patent, as in and by the same, reference being thereunto had, will more fully and at large appear.

Lord Willoughby d'Eresby's Improvements in Compressing Peat.

NOW KNOW YE, that in compliance with the said proviso, I, the said Peter Robert Drummond, Lord Willoughby de Eresby, do hereby declare the nature of my Invention, and the manner in which the same is to be performed, are fully described and ascertained in and by the following statement thereof, reference being had to the Drawing hereunto annexed, and to the figures and letters marked thereon, that is to say:—

The first part of my Invention relates to a mode of using two drawers, frames, or vessels, into which the peat to be pressed is put; such drawers being so connected that the act of moving one from under the press shall place the other under the press; at the same time each drawer, frame, or vessel is capable of independent movement on its axes, in order to discharge its contents after pressure, and to be turned back to receive a fresh supply, as will be hereafter fully described.

Secondly, the Invention relates to a mode of employing wood as a means of allowing the passage of water upwards from the peat when under compression. And in order to give the best information in my power, I will proceed to describe the Drawing hereunto annexed. I would, however, first remark, that such is the nature of peat, that in submitting it to pressure in order to express the water therefrom, that unless great care is observed in the constructing of the apparatus employed, the peat as well as the water will be expressed through even very small openings. And it may be useful to state that the description of peat which should by preference be selected, when it is to be submitted to pressure, is that description which is free from fibres and black, having somewhat the appearance of blackened butter. The peat should be dug as usual, about eight inches by three, and three inches thick, and these blocks of peat are to be placed to dry for four or five days, and by preference under sheds, and again after pressure they should be further dried.

Description of the Drawing.

Figure 1, *a* is the steam-engine boiler; *b*, steam engine; *c*, main shaft of engine; *d*, compressing pump; *e*, exhausting pump; *f*, hand gear for reversing the motion of the sliding drawers which contain the peats; *g*, air vessel; and *h*, two cocks, that open and shut alternately, the use of which will be explained hereafter; *i* and *i* are pipes attaching the pumps *d* and *c* with the vessel *j*, from which four branch pipes *k*, *k*, *k*, *k*, convey the water to the four hydraulic cylinders *l*, *l*, *l*, *l*, and by the pump *d* the rams or pistons will be forced out, and the compressing plate (to which they are all secured) lowered upon the top of the peat with great power. The peat is to be placed in sliding drawers

or frames *m*, of which there are two to the machine, one of them being under compression, while the other is being filled. This frame *m* contains about one hundred square pieces of peat, as represented in the Drawing; but this size may be varied.

The parallel frame *o*, *o*, upon which the frame *m* has been run out, having been withdrawn, and left the frame or drawer supported by its axis or necks at the ends only, it is now to be turned over upon these axes or necks, and the compressed peats will be emptied into a railway carriage below to receive them; the sliding frame or drawer *m* is to be turned back, and the handle *n* to be pushed in, as represented at the other end of the machine; this having been done, the small rollers, which move on their axes, and are carried by the frame *o*, *o*, will be below and support the frame or drawer. It may then be refilled with as much expedition as possible.

I shall now proceed to describe the mode of raising the pistons and compressing plate which have been forced down by the introduction of water into the hydraulic cylinders *l*, *l*, *l*, *l*, by the pump *d*. The cocks *h* are to be reversed, and the exhausting pump *e* will withdraw the water from the cylinders *l*, *l*, *l*, *l*, and return it to the supply well, as represented in the Drawing. This will offer a vacuum to the pistons or rams of the hydraulic cylinder; at the same time the pump *d* will continue storing up its power into an air vessel *g*, by pumping back the withdrawn wa ter, and be ready for a second operation. If we suppose the four pistons in the cylinders *l*, *l*, *l*, *l*, are each ten inches in diameter, and the water thus withdrawn and the atmosphere at liberty to act upon the under surface of the compressing plate to which the pistons are attached, there would be sufficient power to raise the whole mass were it not for the adhesion which takes place between the under side of the compressing plate and the upper surface of the peat; a very considerable power is requisite to separate them. To effect this object, the compressing plate has eight regulating screws, which, when down, come in contact with eight steel bars, four on each side of the machine, marked *p*, *p*, *p*, *p*, in the elevation, Figure 2. The elasticity of these bars is to overcome the adhesion; and the exhausting pump *e* will return the pistons and compressing plate to their original position on the admission of air through a valve in the compressing plate; the handle *f* of the hand gear is now to be reversed, which will bring out the sliding frame containing the peats, which are shewn under compression, and the other sliding frame *m*, already described, being refilled, will pass under the compressing plate. This having being done, the cocks *h* will be returned, and the highly compressed air in the air vessel *g* will force the water that has been pumped into it by the pump *d* to the cylinders *l*, *l*, *l*, *l*, and thus exert not

only force enough to compress the peat, but to bend the springs or steel bars, that they in their reaction, when the machine is reversed, may overcome the adhesion between the compressing plate and the peat.

The second sliding frame *m* being now out, the handle *n* is to be withdrawn, the frame will then swing upon its centres, the railway carriage being in the position to receive the compressed peats, the sliding frame will be emptied as before. Figure 3 is a plan of the sliding frames or drawers, shewing the manner of connecting them together by a centre piece *q*, which admits of the one frame or drawer being turned over while the other is at rest, and thereby offering great facility to the operation of compressing the peat.

Figures 4, 5 and 6 show the parts on a larger scale; but in this case the compressing plate is only worked by two hydraulic cylinders in place of four, as is the case in the other Figures; but whatever be the number, the same system of construction of the parts is to be observed. The drawers or frames which receive the peat are of a quadrangular form, and of iron, and they slide easily yet fit closely at the sides in the frame of the hydraulic machine; and the bed of the hydraulic press is perforated with fine or very small holes; the bottom of the drawers or frames being closed with a layer of horsehair cloth, and there is a layer of close linen or cotton fabric between the hair cloth and the peat in the frames; by this arrangement the peat will be prevented filtering away with the water which is pressed out therefrom in a downward direction; and in order to prevent the peat passing upwards through the pressing plate, and yet have the advantage of allowing the water to run off in an upward direction, the pressing plate has a series of holes, as is very clearly shown in the enlarged sectional views, Figures 4 and 5, and the under plan view, Figure 6; and these holes are filled up with wood, by preference with beach wood, with the grain vertical; by this arangement the water can pass up through the wood and run off in grooves formed between the different plates or surfaces which compose the pressing plate, and the water is run off beyond the frames by projecting gutters, as is shown in the Drawing. The pressing plate consists of two surfaces of iron and one of wood, which are bound to each other; and there is a valve which allows air to pass between the under side of the pressing plate and the peat at the time the pressing plate is being raised; the valve being closed when the peat is under pressure.

Having thus described the nature of my Invention, and the manner of performing the same, I would have it understood that I lay no claim to any of the parts herein described, other than is hereafter particularly pointed out, neither do I confine myself to the means shown and described of obtaining

the requisite pressure, so long as my Invention be retained; and what I claim is,—

First, the mode of combining two frames, drawers, or vessels, as above described.

Secondly, I claim the mode of applying wood to the pressing plate as above described.

In witness whereof, I, the said Peter Robert Drummond, Lord Willoughby de Eresby, have hereunto set my hand and seal, this Seventeenth day of January, in the year of our Lord One thousand eight hundred and forty.

(L.S.) WILLOUGHBY DE ERESBY.

AND BE IT REMEMBERED, that on the Seventeenth day of January, in the year of our Lord 1840, the aforesaid the Right Honorable Peter Robert Drummond, Lord Willoughby de Eresby, came before our said Lady the Queen in Her Chancery, and acknowledged the Specification aforesaid, and all and every thing therein contained and specified, in form above written. And also the Specification aforesaid was stamped according to the tenor of the Statute made for that purpose.

SENIOR.

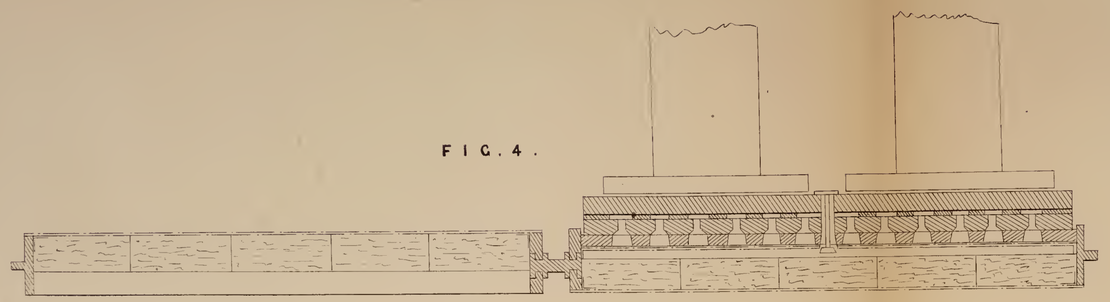
Inrolled the Twentieth day of January, in the year of our Lord One thousand eight hundred and forty.

LONDON:
Printed by GEORGE EDWARD EYRE and WILLIAM SPOTTISWOODE,
Printers to the Queen's most Excellent Majesty. 1857.

A. D. 1839. July 20. Nº 8160.
LORD WILLOUGHBY DE ERESBY'S Specification.

[1 SHEET]

FIG. 4.



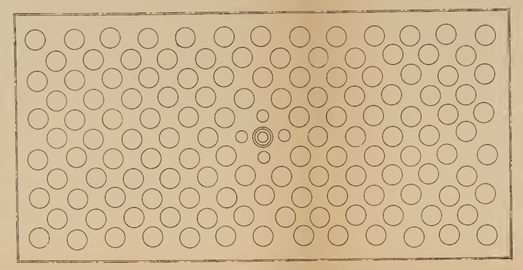


FIG. 6.

FIG. 5.

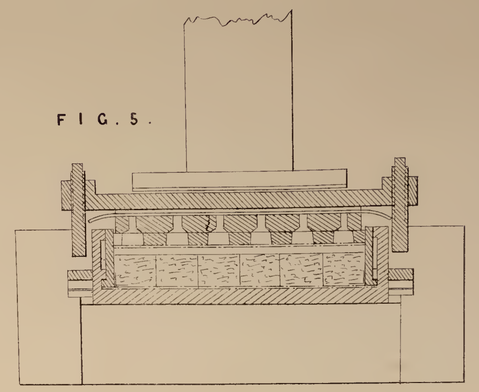


FIG. 1.

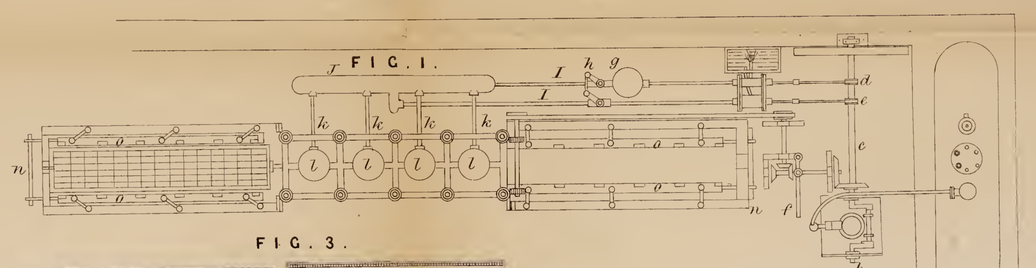
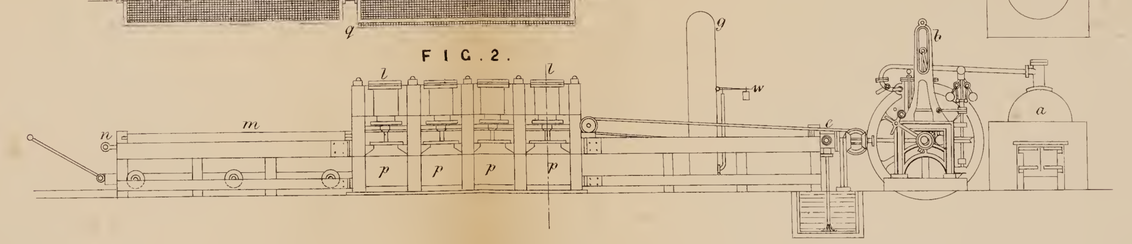


FIG. 3.

FIG. 2.



Scale for Figs 1. 2. 3

Scale for Figs 4 5. 6

The enrolled drawing is colored

London: Printed by George Edward Eyre and William Spottiswoode.
Printers to the Queen's most Excellent Majesty. 1857.

Drawn on Stone by Maiby & Sons